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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, THINH T

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,454

Applicant(s)

RABADAM ET AL.

Examiner

Thinh T Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is in response to Applicant's Amendment filed 10 May 2002.

Note that the figures and reference numbers referred to in this Office Action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

2. Claims 1-13 are pending in the Application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b/e) that form the basis for the rejections under this section made in this office action.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1,2, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Berney (U.S. Patent 5703395) or Lin (US patent 5239198)

REGARDING CLAIM 1,2

Berney et al. disclose a non-volatile memory package (column 4 lines 28-29, fig 2) comprising: a substrate (fig 2 reference3) having a first surface and a second surface;

an integrated circuit die including a memory array (fig 2 reference 2)mounted to the first surface of the substrate, and a passive component (fig 2 reference 20, column 5 lines 29-33) mounted to the second surface of substrate.

Similarly Lin et al. (fig 6, fig 7, column 6 lines 57-62, claim 20) disclose the same invention.

REGARDING CLAIM 12

Barney disclose a memory semiconductor package with passive component(fig 2 reference 20, column 5 lines 29-33) and resistor and capacitor are inherently passive component.

Similarly Lin et al. (fig 6, fig 7, column 6 lines 57-62,claim 20) disclose the same invention.

5. Claims 3,4,5,9,11 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (US patent 5239198)

REGARDING CLAIM 3

Lin et al. (fig 6,fig 7 column 6 lines 57-62) show an array of solder bumps mounted to the substrate.

REGARDING CLAIM 4,5

Lin et al. (fig. 7) show the passive component is located centrally within the array of solder balls and the solder balls are higher than the passive component.

REGARDING CLAIM 9

Lin et al. (column 3 line 61), teach the use of epoxy glue.

REGARDING CLAIM 11

Lin et al. (the abstract, fig 6) teach the mounting of passive component with a conductive material.

6. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Berney (US patent 5703395).

Berney (column 4 line 29) show a die of EEPROM, which is a flash memory device.

Claim Rejections - 35 USC § 103

7. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berney et al.(US patent 5703395) in view of further remark.

REGARDING CLAIM 6

Although Barney et al. do not specifically teach the embedding of a voltage regulator

Berney et al. do mention (column 5 line 32) that auxiliary chip 20 can be a control circuit and voltage regulator are inherently a control circuit and this disclosure make claim 9 obvious over Berney et al.

9. Claims 7,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US patent 5239198) in view of Fukutomi et al. (US patent 6268648).

REGARDING CLAIM 7,8

Lin et al. disclose all the invention including solder balls higher than the passive component (fig 6, fig 7, claim 20) except for carving a cavity into the middle of the substrate for components, Fukutomi, however teaches how to make a substrate structure with cavity (fig 1, fig 3). It would have been obvious to one of ordinary skill in the art the time the invention was made to complement the teachings of Lin et al. with the teachings of Fukutomi et al. in order to come up with the invention of claim 7,8.

The reasoning is as follows:

A person of ordinary skill in the art would have been motivated to complement the teachings of Lin et al. with the teachings of Fukutomi et al. in order to achieve high reliability and decrease in size as suggested by Fukutomi et al. in the abstract.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US patent 5239198) in view of further remark.

Lin et al. (fig 6, fig 7, claim 20, column 3 line 61) disclose all the invention except for the thickness of the epoxy glue layer. It would have been obvious to one of ordinary skill in the art the time the invention was made to use the teachings of Lin et al. and then select the right thickness of epoxy in order to come up with claim 10 since it has been held that discovering an optimum value of a resulted effective variable involves only routine skill in the art.

11. Applicant's arguments with respect to claims 1-13 filed in the amendment on 1/15/2004 have been fully considered but they are not persuasive.

A/ in regard to the Barney reference (US patent 5703395) Applicant's main argument is supplementary chip 20 is only an active device and therefore does not anticipate applicant invention that the second chip is a passive device. The Examiner must point out to Applicant that on column 5 lines 28-30, The Barney reference reads: **The supplementary component (Barney means chip 20) can be any active or passive electronic element.**

B/ in regard to the Lin reference, Applicant main's argument is: Lin do not teaches or suggest non-volatile memory or memory device. This argument is also considered not persuasive for the following reasons:

I/ The Examiner must point out to the Applicant that Lin (in the abstract) teaches the construction of a multiple chip semiconductor package (MCM) and multiple chip semiconductor package has been developed, well known and in use as memory package for the semiconductor industry as evident by the disclosure by Shokrgozar et al (US patent 5434745), column 1 lines 32-34.

II/ Lin also teaches that his invention (column 2 lines 31-35) is an alternative low cost

for the **Single in line memory module (SIMM)** (Lin et al. reference column 2 line 21)and **therefore imply that Lin's invention is for use in memory packaging besides other applications.**

12. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Rahim (US patent 6,362,525) discloses a circuit structure including a passive element formed within a grid array substrate and method for making the same.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on 571-272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Thinh T Nguyen *TTN*

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David Nelms
Supervisory Patent Examiner
Technology Center 2800